

In view of the rejections, claims 6, 12 and 16-23 have been cancelled, and claims 1-5, 7-11, 13 and 14 have been amended.

In amended claim 1, a highly absorbent composite sheet comprises a non-woven fabric substrate having a bulky structure; solid SAP partly contained inside the bulky structure and partly disposed on a surface of the non-woven substrate; and a hot-melt adhesive as a thermally fusible component. The hot-melt adhesive forms a fibrous network in a form of a mesh, which contacts and covers the solid SAP so that the solid SAP is held in position.

Namely, in the invention, the hot-melt adhesive is applied in the form of mesh or net to fix the solid SAP on the substrate. Accordingly, the solid SAP can be securely retained on the substrate while absorbing liquid through the hot-melt adhesive in the form of mesh.

In other independent claims, the basic structure is similar to that recited in claim 1. Particularly, the hot-melt adhesive in the form of mesh is used to hold the solid SAP and other absorbing materials.

WO '999 was invented by the present inventors together with another inventor. WO '999 discloses an absorbent sheet basically includes an absorbent composite mainly composed of hydratable fine fibers in the form of microfibril obtained from cellulose or a derivative thereof and absorbent polymer particles bonded together by the hydratable fine fibers in the form of microfibril, and a sheet supporting the absorbent layer. As clearly seen from the figures of WO '999, each SAP particles is covered with the fine fibers, but such SAP particles constituting the absorbing layer is not covered with any other material.

In the invention, the hot-melt adhesive is applied in the form of mesh to fix the solid SAP on the substrate. Accordingly, the solid SAP can be securely retained on the substrate while absorbing liquid through the hot-melt adhesive in the form of mesh. In WO '999, a hot-melt adhesive in the form of mesh is not used though the fine fibers in the form of microfibril are at least partly coated. Even if the fine fibers are coated, the fine fibers obtained from cellulose or derivative thereof are entirely different from the hot-melt adhesive in the form of mesh. The

features of the invention are not disclosed or suggested in WO '999.

JP '975 was also invented by the present inventors. A sheet-like absorber is formed as a two-layer structure of a high density layer 11 and a bulky low density layer 12. High resin particles (SAP particles) 20 are joined to and carried on fibers constituting the low density layer 12 by a joining component 13. Thus, the SAP particles are included or contained in the low density layer 12 and are joined therewith by the joining component 13.

In the invention, the hot-melt adhesive is applied in the form of mesh to cover and fix the solid SAP on the substrate. As clearly shown in the drawing in the abstract, the joining component 13 is mixed with the SAP particles 20, but not formed to cover the SAP particles in the form of mesh. Therefore, the features of the invention are not disclosed or suggested in JP '975.

Also, the priority date of the application is September 29, 1999, while JP '975 was published on July 25, 2000. If necessary, a verified translation of the priority document will be filed to remove JP '975 as a reference.

In EP '349, the absorbent article includes an inner sheet and one outer sheet of fine interstice, and the other outer sheet with fluid permeability. The one outer sheet adheres to the face on the opening side of the recesses on the inner sheet, while the other outer sheet adheres to the face on the opposite side of the inner sheet.

In Fig. 1 of EP '349, the inner sheet 2 is sandwiched between the one outer sheet 1 and the other outer sheet 3 in a condition that SAP 4 is held in the recesses 2a of the inner sheet 2 by means of an adhesive. In the invention, the hot-melt adhesive is applied in the form of mesh to cover and fix the solid SAP. In EP '349, the adhesive is used to join the sheets, but EP '349 does not disclose or suggest that the adhesive is applied in the form of mesh. Thus, the features of the invention are not disclosed or suggested in EP '349.

In the invention, the hot-melt adhesive is applied to cover or overlay the SAP to securely fix the SAP on non-woven substrate, while permitting the moisture to path therethrough. The features

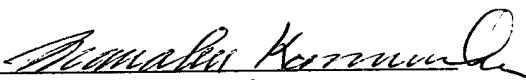
of the invention are not disclosed or suggested in the cited references. Even if the cited references are combined, the invention is not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

A one month extension of time is hereby requested. A check in the amount of \$55.00 is attached herewith for the one month extension of time.

Respectfully Submitted,

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1.(amended) Highly absorbent composite sheet comprising:

a non-woven fabric substrate[,  
solid SAP and a thermally fusible component, characterized in that:

said non-woven substrate has] having a bulky structure;  
[part of said] solid SAP [is] partly contained inside said bulky structure and [the rest is exposed] partly disposed on [the] a surface of said non-woven substrate; and  
[said thermally fusible component is] a hot-melt adhesive as a thermally fusible component,[;]

→ said hot-melt adhesive [forms] forming a fibrous network in a form of a mesh,[; and]

said fibrous network [covers] contacting and covering said solid SAP [in contact with said solid SAP whereby] so that said solid SAP is held in position.

2.(amended) The highly absorbent composite sheet of claim 1, [wherein said solid SAP particles are covered with] further comprising fine cellulose disposed on the solid SAP as a layer, said fine cellulose being covered by the fibrous network.

3.(amended) The highly absorbent composite sheet of claim 1, wherein [the] a coated amount of said hot-melt adhesive is 0.2 to 10 g / m<sup>2</sup>.

4.(amended) The highly absorbent composite sheet of claim 1, wherein said hot-melt adhesive is mainly composed of ethylene-vinyl acetate copolymer and non-tacking.

5.(amended) The highly absorbent composite sheet of claim 4, wherein [the] a content of vinyl acetate in ethylene-vinyl acetate which is [the] a main composition of said hot-melt adhesive is 20 to 40 % by weight and [the] a thermal fluidity rate of said hot-melt adhesive is 50 to 150 g / 10 minutes.

7.(amended) A highly absorbent composite comprising:

→ a composite absorbent [( M ) which comprises] including a non-woven substrate, a SAP layer, and a hot-melt adhesive layer forming a fibrous network in a form of a mesh and substantially entirely covering said SAP layer, and

a sheet material [( N )] disposed on said adhesive layer[,]  
and bonded with said composite absorbent [( M ) and said sheet material ( N ) being bonded together] by said hot-melt adhesive layer by an adhesive property thereof to form a composite structure [( M/N )].

8.(amended) A highly absorbent composite comprising:

[two] first and second composite absorbents, [( M ) and ( M' )] each [of which comprises] comprising a non-woven substrate, [a] an SAP layer, and a hot-melt adhesive layer forming a fibrous network in a form of a mesh and covering said SAP layer, said first composite absorbent [( M )] being laid on the [other] second composite absorbent [( M' ) in] such [manner] that said hot-melt adhesive layers contact to each other and [being] are bonded together by an adhesive property thereof to form a two material composite structure [( M/M' )].

9.(amended) The highly absorbent composite of claim 8, [wherein] further comprising an additional sheet material [( N )] interposed between said first and second composite absorbents [( M ) and ( M' )] and bonded thereto by an adhesive property of said hot-melt layers of said first and second composite absorbents [( M ) and ( M' )] to form a three material composite structure [( M/N/M' )].

13.(amended) A highly absorbent composite sheet comprising: [in which a part of solid SAP is contained in the voids of a non-woven fabric on one surface of]

a non-woven substrate including a non-woven fabric with voids therein, [and the rest of the]

solid SAP partly disposed in the voids and [is] distributed almost all over in layers [as exposed] on [the] a surface of the non-woven fabric, and [wherein the surface of said exposed solid SAP layer is covered by]

→ a dual fibrous network covering a surface of the solid SAP, said dual fibrous network having [of] a first fibrous network in a form of dense mesh comprising a hot-melt adhesive and a second fibrous network in a form of looser mesh positioned over [and than] said first fibrous network.

14.(amended) [A] The highly absorbent composite sheet of claim 13, wherein said dual fibrous network substantially entirely covers the solid SAP to thereby prevent the [with little] solid SAP from coming off[, in which a part of solid SAP is contained in the voids of the non-woven fabric on one surface of a non-woven substrate and the rest of the solid SAP is distributed almost all over in layers as exposed on the surface of the non-woven fabric, wherein the surface of said exposed solid SAP layer is covered by a dual fibrous network of a first fibrous network of dense mesh comprising hot-melt adhesive and a second fibrous network of looser mesh positioned over and than said first fibrous network].